

ASAP

Work Order ID 138225

\*138225\*

Tuesday, October 27, 2015 11:06:03 AM

Page 1

Item ID: D4131-043 Accept \*N900040100\* Setup Start \*NS1\*  
Revision ID: Stop \*NS2\*  
Item Name: Doubler Assembly  
Start Date: 10/26/2015 Start Qty: 4.00 \*4\* Cust Item ID:  
Required Date: 10/26/2015 Req'd Qty: 4.00 \*4\* Customer:  
Reference:

Approvals: Process Plan: MCS Date: OCT 28 2015 Tooling: Date: Run Start \*NR1\*  
QC: Date: SPC (Y/N): Date: Stop \*NR2\*

| Sequence ID/<br>Work Center ID | Operation<br>Description                                                      | Set Up/<br>Run Hours | Tool ID | Tool # | Plan<br>Code | Accept<br>Qty | Reject<br>Qty | Reject<br>Number | Insp.<br>Stamp |
|--------------------------------|-------------------------------------------------------------------------------|----------------------|---------|--------|--------------|---------------|---------------|------------------|----------------|
| Draw Nbr                       | Revision Nbr                                                                  |                      |         |        |              |               |               |                  |                |
| D4131                          | C                                                                             |                      |         |        |              |               |               |                  |                |
| 100                            | FLOW WATER JET                                                                | 0.00                 |         |        |              |               |               |                  |                |
| *100*                          |                                                                               |                      |         |        |              |               |               |                  |                |
| Waterjet                       | Memo                                                                          | 0.01                 |         |        |              |               |               |                  |                |
| FLOW CNC Waterjet              | 1-Cut D4131-7 as per Dwg<br>Dwg Rev: C<br>Prog Rev: C<br>2-Deburr as required |                      |         |        |              |               |               |                  |                |
| 110                            | QC2- Inspect parts off machine FAI/FAIB                                       | 0.00                 |         |        |              |               |               |                  |                |
| *110*                          |                                                                               |                      |         |        |              |               |               |                  |                |
| QC                             | Memo                                                                          | 0.00                 |         |        |              |               |               |                  |                |
| Quality Control                |                                                                               |                      |         |        |              |               |               |                  |                |
| 120                            | QC8- Inspect parts - second check                                             | 0.00                 |         |        |              |               |               |                  |                |
| *120*                          |                                                                               |                      |         |        |              |               |               |                  |                |
| QC                             | Memo                                                                          | 0.00                 |         |        |              |               |               |                  |                |
| Quality Control                |                                                                               |                      |         |        |              |               |               |                  |                |

DAS  
38  
9-89  
JAN 22 2016

DQA: \_\_\_\_\_ Date: \_\_\_\_\_



## WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: \_\_\_\_\_ Date: \_\_\_\_\_

Work Order update only ☐

|                                                              |  |                                                                                                                                                                                    |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |  |                                                                                                                                                     |  |  |
|--------------------------------------------------------------|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|-----------------------------------------------------------------------------------------------------------------------------------------------------|--|--|
| Work Order: _____<br><br>Part No. _____<br><br>NCR No. _____ |  | <b>DISPOSITION</b><br><br>Rework <input type="checkbox"/><br>Scrap <input type="checkbox"/><br>Use-as-is <input type="checkbox"/><br>Suspected Unapproved <input type="checkbox"/> |  | <b>AGAINST DEPARTMENT/PROCESS</b><br><br><div style="display: flex; justify-content: space-between;"> <div>           Skid-tube <input type="checkbox"/><br/>           Machining <input type="checkbox"/><br/>           Thermoforming <input type="checkbox"/><br/>           Large Fab <input type="checkbox"/> </div> <div>           Cross tube <input type="checkbox"/><br/>           Small Fab <input type="checkbox"/><br/>           Finishing <input type="checkbox"/><br/>           Composite <input type="checkbox"/> </div> <div>           Water Jet <input type="checkbox"/><br/>           Prod. Eng. Coord. <input type="checkbox"/><br/>           Rec/Store/Packaging <input type="checkbox"/><br/>           Supplier <input type="checkbox"/> </div> <div>           Engineering <input type="checkbox"/><br/>           Quality <input type="checkbox"/><br/>           Other <input type="checkbox"/> </div> </div> |  |  |                                                                                                                                                     |  |  |
| Date :                                                       |  | Step #:                                                                                                                                                                            |  | QTY Effective :                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |  | MRB (QSI042) Approval<br><br><br>Completed By<br><br><br>Lead hand / Supervisor<br>Approval Verification<br><br><br>QC / QA Coordinator<br>Approval |  |  |
| Description Work Order Deviation                             |  |                                                                                                                                                                                    |  | Disposition                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |  |  |                                                                                                                                                     |  |  |
|                                                              |  |                                                                                                                                                                                    |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |  |                                                                                                                                                     |  |  |
|                                                              |  |                                                                                                                                                                                    |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |  |                                                                                                                                                     |  |  |

| Root Cause         |                          |                       |                          | FAULT CATEGORY         |                          |                                   |                          |
|--------------------|--------------------------|-----------------------|--------------------------|------------------------|--------------------------|-----------------------------------|--------------------------|
| Environment        | <input type="checkbox"/> | No Re-verification    | <input type="checkbox"/> | Pressure/Forced        | <input type="checkbox"/> | Temperature/Cure                  | <input type="checkbox"/> |
| Design             | <input type="checkbox"/> | Operator              | <input type="checkbox"/> | Bending                | <input type="checkbox"/> | Set-up                            | <input type="checkbox"/> |
| Doc/Data           | <input type="checkbox"/> | Offset/Setup          | <input type="checkbox"/> | Centre Not Concentric  | <input type="checkbox"/> | BOM/Route                         | <input type="checkbox"/> |
| Equip/Tooling      | <input type="checkbox"/> | Supplier              | <input type="checkbox"/> | Cracks                 | <input type="checkbox"/> | Broken/Damage/Defect              | <input type="checkbox"/> |
| Handling/Pre       | <input type="checkbox"/> | Training              | <input type="checkbox"/> | Crimp/Kink/Ripple/Wave | <input type="checkbox"/> | Inspection Incomplete/Unqualified | <input type="checkbox"/> |
| Material           | <input type="checkbox"/> | Use for Testing       | <input type="checkbox"/> | Cuffs                  | <input type="checkbox"/> | Contamination                     | <input type="checkbox"/> |
| Internal Transport | <input type="checkbox"/> | Poor Information      | <input type="checkbox"/> | Crushing               | <input type="checkbox"/> | Countersink                       | <input type="checkbox"/> |
| Tribal Knowledge   | <input type="checkbox"/> | Rushing               | <input type="checkbox"/> | Heat Treat             | <input type="checkbox"/> | Cut Too Short                     | <input type="checkbox"/> |
| LOA                | <input type="checkbox"/> | Product Improvement   | <input type="checkbox"/> | Wave/Twist in Tube     | <input type="checkbox"/> | Instructions Incomplete/Unclear   | <input type="checkbox"/> |
| Substation         | <input type="checkbox"/> | Process Improvement   | <input type="checkbox"/> | Marks/Chatter          | <input type="checkbox"/> | Drill Holes                       | <input type="checkbox"/> |
| Past Expiry Date   | <input type="checkbox"/> | Manufacturing Process | <input type="checkbox"/> | OTHER : _____          |                          |                                   |                          |
| Misidentified      | <input type="checkbox"/> | Past Due              | <input type="checkbox"/> |                        |                          |                                   |                          |



DQA: \_\_\_\_\_ Date: \_\_\_\_\_



## WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: \_\_\_\_\_ Date: \_\_\_\_\_

Work Order update only ☐

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| Work Order: _____<br><br>Part No. _____<br><br>NCR No. _____                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |  | <b>DISPOSITION</b><br><br>Rework <input type="checkbox"/><br>Scrap <input type="checkbox"/><br>Use-as-is <input type="checkbox"/><br>Suspected Unapproved <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  | <b>AGAINST DEPARTMENT/PROCESS</b><br><br><div style="display: flex; justify-content: space-between;"> <div>             Skid-tube <input type="checkbox"/><br/>             Machining <input type="checkbox"/><br/>             Thermoforming <input type="checkbox"/><br/>             Large Fab <input type="checkbox"/> </div> <div>             Cross tube <input type="checkbox"/><br/>             Small Fab <input type="checkbox"/><br/>             Finishing <input type="checkbox"/><br/>             Composite <input type="checkbox"/> </div> <div>             Water Jet <input type="checkbox"/><br/>             Prod. Eng. Coord. <input type="checkbox"/><br/>             Rec/Store/Packaging <input type="checkbox"/><br/>             Supplier <input type="checkbox"/> </div> <div>             Engineering <input type="checkbox"/><br/>             Quality <input type="checkbox"/><br/>             Other <input type="checkbox"/> </div> </div> |  |  |                                                                                                                                                     |  |  |
| Date :                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |  | Step #:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |  | QTY Effective :                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |  |  | MRB (QSI042) Approval<br><br><br>Completed By<br><br><br>Lead hand / Supervisor<br>Approval Verification<br><br><br>QC / QA Coordinator<br>Approval |  |  |
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|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |  |  |                                                                                                                                                     |  |  |
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| <b>Root Cause</b><br><div style="display: flex;"> <div style="width: 50%;">             Environment <input type="checkbox"/><br/>             Design <input type="checkbox"/><br/>             Doc/Data <input type="checkbox"/><br/>             Equip/Tooling <input type="checkbox"/><br/>             Handling/Pre <input type="checkbox"/><br/>             Material <input type="checkbox"/><br/>             Internal Transport <input type="checkbox"/><br/>             Tribal Knowledge <input type="checkbox"/><br/>             LOA <input type="checkbox"/><br/>             Substation <input type="checkbox"/><br/>             Past Expiry Date <input type="checkbox"/><br/>             Misidentified <input type="checkbox"/> </div> <div style="width: 50%;">             No Re-verification <input type="checkbox"/><br/>             Operator <input type="checkbox"/><br/>             Offset/Setup <input type="checkbox"/><br/>             Supplier <input type="checkbox"/><br/>             Training <input type="checkbox"/><br/>             Use for Testing <input type="checkbox"/><br/>             Poor Information <input type="checkbox"/><br/>             Rushing <input type="checkbox"/><br/>             Product Improvement <input type="checkbox"/><br/>             Process Improvement <input type="checkbox"/><br/>             Manufacturing Process <input type="checkbox"/><br/>             Past Due <input type="checkbox"/> </div> </div> |  | <b>FAULT CATEGORY</b><br><div style="display: flex;"> <div style="width: 33%;">             Pressure/Forced <input type="checkbox"/><br/>             Bending <input type="checkbox"/><br/>             Centre Not Concentric <input type="checkbox"/><br/>             Cracks <input type="checkbox"/><br/>             Crimp/Kink/Ripple/Wave <input type="checkbox"/><br/>             Cuffs <input type="checkbox"/><br/>             Crushing <input type="checkbox"/><br/>             Heat Treat <input type="checkbox"/><br/>             Wave/Twist in Tube <input type="checkbox"/><br/>             Marks/Chatter <input type="checkbox"/> </div> <div style="width: 33%;">             Temperature/Cure <input type="checkbox"/><br/>             Set-up <input type="checkbox"/><br/>             BOM/Route <input type="checkbox"/><br/>             Broken/Damage/Defect <input type="checkbox"/><br/>             Inspection Incomplete/Unqualified <input type="checkbox"/><br/>             Contamination <input type="checkbox"/><br/>             Countersink <input type="checkbox"/><br/>             Cut Too Short <input type="checkbox"/><br/>             Instructions Incomplete/Unclear <input type="checkbox"/><br/>             Drill Holes <input type="checkbox"/> </div> <div style="width: 33%;">             Power Loss/Surge <input type="checkbox"/><br/>             Folio/Program <input type="checkbox"/><br/>             Grain <input type="checkbox"/><br/>             Weld <input type="checkbox"/><br/>             Wrong Stock Pulled <input type="checkbox"/><br/>             Out of Sequence <input type="checkbox"/><br/>             Off-set <input type="checkbox"/><br/>             Misabeled <input type="checkbox"/><br/>             Fit/Function <input type="checkbox"/><br/>             Misaligned/off center <input type="checkbox"/> </div> <div style="width: 33%;">             Positioned Wrong <input type="checkbox"/><br/>             Outside Dimensions <input type="checkbox"/><br/>             Over/Under tolerance <input type="checkbox"/><br/>             Part Incorrect <input type="checkbox"/><br/>             Part Lost/Missing <input type="checkbox"/><br/>             Part Moved <input type="checkbox"/><br/>             Drawing <input type="checkbox"/><br/>             Finish <input type="checkbox"/><br/>             Misread <input type="checkbox"/><br/>             Turning Sequence <input type="checkbox"/> </div> </div> |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |  |  |                                                                                                                                                     |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  | OTHER : <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |  |  |                                                                                                                                                     |  |  |

**\*138225\***

Page 3

**\*N900040100\***

**Setup Start \*NS1\***

Stop \*NS2\*

**Start Date:** 10/26/2015    **Start Qty:** 4.00    **\*4\***

**Cust Item ID:**

**Required Date:** 10/26/2015      **Req'd Qty:** 4.00      **\*1\***

**Customer:**

**Reference:**

**Approvals:**      **Process Plan:** \_\_\_\_\_ **Date:** \_\_\_\_\_ **Tooling:** \_\_\_\_\_ **Date:** \_\_\_\_\_      **Run**      **Start**      **\*NR1\***  
                  **QC:** \_\_\_\_\_ **Date:** \_\_\_\_\_ **SPC (Y/N):** \_\_\_\_\_ **Date:** \_\_\_\_\_      **Stop**      **\*NR2\***

[illegible]

DQA: \_\_\_\_\_ Date: \_\_\_\_\_



## WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: \_\_\_\_\_ Date: \_\_\_\_\_

Work Order update only ☐

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|--------------------------------------------------------------|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|-----------------------------------------------------------------------------------------------------------------------------------------------------|--|--|
| Work Order: _____<br><br>Part No. _____<br><br>NCR No. _____ |  | <b>DISPOSITION</b><br><br>Rework <input type="checkbox"/><br>Scrap <input type="checkbox"/><br>Use-as-is <input type="checkbox"/><br>Suspected Unapproved <input type="checkbox"/> |  | <b>AGAINST DEPARTMENT/PROCESS</b><br><br><div style="display: flex; justify-content: space-between;"> <div>           Skid-tube <input type="checkbox"/><br/>           Machining <input type="checkbox"/><br/>           Thermoforming <input type="checkbox"/><br/>           Large Fab <input type="checkbox"/> </div> <div>           Cross tube <input type="checkbox"/><br/>           Small Fab <input type="checkbox"/><br/>           Finishing <input type="checkbox"/><br/>           Composite <input type="checkbox"/> </div> <div>           Water Jet <input type="checkbox"/><br/>           Prod. Eng. Coord. <input type="checkbox"/><br/>           Rec/Store/Packaging <input type="checkbox"/><br/>           Supplier <input type="checkbox"/> </div> <div>           Engineering <input type="checkbox"/><br/>           Quality <input type="checkbox"/><br/>           Other <input type="checkbox"/> </div> </div> |  |  |                                                                                                                                                     |  |  |
| Date :                                                       |  | Step #:                                                                                                                                                                            |  | QTY Effective :                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |  | MRB (QSI042) Approval<br><br><br>Completed By<br><br><br>Lead hand / Supervisor<br>Approval Verification<br><br><br>QC / QA Coordinator<br>Approval |  |  |
| Description Work Order Deviation                             |  |                                                                                                                                                                                    |  | Disposition                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |  |  |                                                                                                                                                     |  |  |
|                                                              |  |                                                                                                                                                                                    |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |  |                                                                                                                                                     |  |  |

| Root Cause         |                          |                       |                          | FAULT CATEGORY         |                          |                                   |                          |
|--------------------|--------------------------|-----------------------|--------------------------|------------------------|--------------------------|-----------------------------------|--------------------------|
| Environment        | <input type="checkbox"/> | No Re-verification    | <input type="checkbox"/> | Pressure/Forced        | <input type="checkbox"/> | Temperature/Cure                  | <input type="checkbox"/> |
| Design             | <input type="checkbox"/> | Operator              | <input type="checkbox"/> | Bending                | <input type="checkbox"/> | Set-up                            | <input type="checkbox"/> |
| Doc/Data           | <input type="checkbox"/> | Offset/Setup          | <input type="checkbox"/> | Centre Not Concentric  | <input type="checkbox"/> | BOM/Route                         | <input type="checkbox"/> |
| Equip/Tooling      | <input type="checkbox"/> | Supplier              | <input type="checkbox"/> | Cracks                 | <input type="checkbox"/> | Broken/Damage/Defect              | <input type="checkbox"/> |
| Handling/Pre       | <input type="checkbox"/> | Training              | <input type="checkbox"/> | Crimp/Kink/Ripple/Wave | <input type="checkbox"/> | Inspection Incomplete/Unqualified | <input type="checkbox"/> |
| Material           | <input type="checkbox"/> | Use for Testing       | <input type="checkbox"/> | Cuffs                  | <input type="checkbox"/> | Contamination                     | <input type="checkbox"/> |
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| Misidentified      | <input type="checkbox"/> | Past Due              | <input type="checkbox"/> |                        |                          |                                   |                          |



DQA: \_\_\_\_\_ Date: \_\_\_\_\_



## WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: \_\_\_\_\_ Date: \_\_\_\_\_

Work Order update only ☐

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|--------------------------------------------------------------|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|-----------------------------------------------------------------------------------------------------------------------------------------------------|--|--|
| Work Order: _____<br><br>Part No. _____<br><br>NCR No. _____ |  | <b>DISPOSITION</b><br><br>Rework <input type="checkbox"/><br>Scrap <input type="checkbox"/><br>Use-as-is <input type="checkbox"/><br>Suspected Unapproved <input type="checkbox"/> |  | <b>AGAINST DEPARTMENT/PROCESS</b><br><br><div style="display: flex; justify-content: space-between;"> <div>           Skid-tube <input type="checkbox"/><br/>           Machining <input type="checkbox"/><br/>           Thermoforming <input type="checkbox"/><br/>           Large Fab <input type="checkbox"/> </div> <div>           Cross tube <input type="checkbox"/><br/>           Small Fab <input type="checkbox"/><br/>           Finishing <input type="checkbox"/><br/>           Composite <input type="checkbox"/> </div> <div>           Water Jet <input type="checkbox"/><br/>           Prod. Eng. Coord. <input type="checkbox"/><br/>           Rec/Store/Packaging <input type="checkbox"/><br/>           Supplier <input type="checkbox"/> </div> <div>           Engineering <input type="checkbox"/><br/>           Quality <input type="checkbox"/><br/>           Other <input type="checkbox"/> </div> </div> |  |  |                                                                                                                                                     |  |  |
| Date :                                                       |  | Step #:                                                                                                                                                                            |  | QTY Effective :                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |  | MRB (QSI042) Approval<br><br><br>Completed By<br><br><br>Lead hand / Supervisor<br>Approval Verification<br><br><br>QC / QA Coordinator<br>Approval |  |  |
| Description Work Order Deviation                             |  |                                                                                                                                                                                    |  | Disposition                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |  |  |                                                                                                                                                     |  |  |
|                                                              |  |                                                                                                                                                                                    |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |  |                                                                                                                                                     |  |  |

| Root Cause         |                          |                       |                          | FAULT CATEGORY         |                          |                                   |                          |
|--------------------|--------------------------|-----------------------|--------------------------|------------------------|--------------------------|-----------------------------------|--------------------------|
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| Doc/Data           | <input type="checkbox"/> | Offset/Setup          | <input type="checkbox"/> | Centre Not Concentric  | <input type="checkbox"/> | BOM/Route                         | <input type="checkbox"/> |
| Equip/Tooling      | <input type="checkbox"/> | Supplier              | <input type="checkbox"/> | Cracks                 | <input type="checkbox"/> | Broken/Damage/Defect              | <input type="checkbox"/> |
| Handling/Pre       | <input type="checkbox"/> | Training              | <input type="checkbox"/> | Crimp/Kink/Ripple/Wave | <input type="checkbox"/> | Inspection Incomplete/Unqualified | <input type="checkbox"/> |
| Material           | <input type="checkbox"/> | Use for Testing       | <input type="checkbox"/> | Cuffs                  | <input type="checkbox"/> | Contamination                     | <input type="checkbox"/> |
| Internal Transport | <input type="checkbox"/> | Poor Information      | <input type="checkbox"/> | Crushing               | <input type="checkbox"/> | Countersink                       | <input type="checkbox"/> |
| Tribal Knowledge   | <input type="checkbox"/> | Rushing               | <input type="checkbox"/> | Heat Treat             | <input type="checkbox"/> | Cut Too Short                     | <input type="checkbox"/> |
| LOA                | <input type="checkbox"/> | Product Improvement   | <input type="checkbox"/> | Wave/Twist in Tube     | <input type="checkbox"/> | Instructions Incomplete/Unclear   | <input type="checkbox"/> |
| Substation         | <input type="checkbox"/> | Process Improvement   | <input type="checkbox"/> | Marks/Chatter          | <input type="checkbox"/> | Drill Holes                       | <input type="checkbox"/> |
| Past Expiry Date   | <input type="checkbox"/> | Manufacturing Process | <input type="checkbox"/> | OTHER : _____          |                          |                                   |                          |
| Misidentified      | <input type="checkbox"/> | Past Due              | <input type="checkbox"/> |                        |                          |                                   |                          |



# Picklist Print

Tuesday, October 27, 2015 11:06:03 AM

Page 1

Work Order ID: 138225

**\*138225\***

Parent Item: D4131-043

**\*D4131-043\***

Parent Item Name: Doubler Assembly

Start Date: 10/26/2015

Required Date: 10/26/2015

Start Qty: 4.00

Required Qty: 4.00

Comments: IPP Rev:A 10.10.06 new issue DD verf:EC

| Component Item ID/<br>Item Name | Replacement<br>Item ID | Mfg/<br>Purch | Bin<br>Item | Primary<br>Location | Last<br>Location | Route<br>Seq ID | Unit of<br>Measure | Qty on<br>Hand | Qty per Kit | Total<br>Qty | Qty<br>Issued | Date<br>Issued | Status |
|---------------------------------|------------------------|---------------|-------------|---------------------|------------------|-----------------|--------------------|----------------|-------------|--------------|---------------|----------------|--------|
|---------------------------------|------------------------|---------------|-------------|---------------------|------------------|-----------------|--------------------|----------------|-------------|--------------|---------------|----------------|--------|

M6061T6S.063

Purchased

No

100

sf

117.0000

0.1807

0.760842

**\*M6061T6S 063\***

6061-T6 .063 Sheet

\*\*

16-1-22

Location

Loc Qty

Loc Code

MAT01

117

M132358

117

2

MS20426AD3-3

Purchased

No

165

Each

4,899.000

8

32

**\*MS20426AD3-3\***

RIVET

\*\*

16/01/27

DAS  
36  
9-89

Location

Loc Qty

Loc Code

GA

1918

M131624

1918

ST313

2981

M131624

2981

48

MS21069L3

Purchased

No

165

Each

82.0000

4

16

**\*MS21069L3\***

ANCHOR NUT

\*\*

16/01/27

DAS  
36  
9-89

Location

Loc Qty

Loc Code

ST301

82

m131618

18

m133019

39

m133127

25

4

DQA: \_\_\_\_\_ Date: \_\_\_\_\_



## WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: \_\_\_\_\_ Date: \_\_\_\_\_

Work Order update only ☐

|                                                              |  |                                                                                                                                                                                    |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |  |                                                                                                                                                     |  |  |
|--------------------------------------------------------------|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|-----------------------------------------------------------------------------------------------------------------------------------------------------|--|--|
| Work Order: _____<br><br>Part No. _____<br><br>NCR No. _____ |  | <b>DISPOSITION</b><br><br>Rework <input type="checkbox"/><br>Scrap <input type="checkbox"/><br>Use-as-is <input type="checkbox"/><br>Suspected Unapproved <input type="checkbox"/> |  | <b>AGAINST DEPARTMENT/PROCESS</b><br><br><div style="display: flex; justify-content: space-between;"> <div>           Skid-tube <input type="checkbox"/><br/>           Machining <input type="checkbox"/><br/>           Thermoforming <input type="checkbox"/><br/>           Large Fab <input type="checkbox"/> </div> <div>           Cross tube <input type="checkbox"/><br/>           Small Fab <input type="checkbox"/><br/>           Finishing <input type="checkbox"/><br/>           Composite <input type="checkbox"/> </div> <div>           Water Jet <input type="checkbox"/><br/>           Prod. Eng. Coord. <input type="checkbox"/><br/>           Rec/Store/Packaging <input type="checkbox"/><br/>           Supplier <input type="checkbox"/> </div> <div>           Engineering <input type="checkbox"/><br/>           Quality <input type="checkbox"/><br/>           Other <input type="checkbox"/> </div> </div> |  |  |                                                                                                                                                     |  |  |
| Date :                                                       |  | Step #:                                                                                                                                                                            |  | QTY Effective :                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |  | MRB (QSI042) Approval<br><br><br>Completed By<br><br><br>Lead hand / Supervisor<br>Approval Verification<br><br><br>QC / QA Coordinator<br>Approval |  |  |
| Description Work Order Deviation                             |  |                                                                                                                                                                                    |  | Disposition                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |  |  |                                                                                                                                                     |  |  |
|                                                              |  |                                                                                                                                                                                    |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |  |                                                                                                                                                     |  |  |

| Root Cause                                  |                          |                                                |  | FAULT CATEGORY           |                        |                          |                                   |
|---------------------------------------------|--------------------------|------------------------------------------------|--|--------------------------|------------------------|--------------------------|-----------------------------------|
| Environment <input type="checkbox"/>        | <input type="checkbox"/> | No Re-verification <input type="checkbox"/>    |  | <input type="checkbox"/> | Pressure/Forced        | <input type="checkbox"/> | Temperature/Cure                  |
| Design <input type="checkbox"/>             | <input type="checkbox"/> | Operator <input type="checkbox"/>              |  | <input type="checkbox"/> | Bending                | <input type="checkbox"/> | Set-up                            |
| Doc/Data <input type="checkbox"/>           | <input type="checkbox"/> | Offset/Setup <input type="checkbox"/>          |  | <input type="checkbox"/> | Centre Not Concentric  | <input type="checkbox"/> | BOM/Route                         |
| Equip/Tooling <input type="checkbox"/>      | <input type="checkbox"/> | Supplier <input type="checkbox"/>              |  | <input type="checkbox"/> | Cracks                 | <input type="checkbox"/> | Broken/Damage/Defect              |
| Handling/Pre <input type="checkbox"/>       | <input type="checkbox"/> | Training <input type="checkbox"/>              |  | <input type="checkbox"/> | Crimp/Kink/Ripple/Wave | <input type="checkbox"/> | Inspection Incomplete/Unqualified |
| Material <input type="checkbox"/>           | <input type="checkbox"/> | Use for Testing <input type="checkbox"/>       |  | <input type="checkbox"/> | Cuffs                  | <input type="checkbox"/> | Contamination                     |
| Internal Transport <input type="checkbox"/> | <input type="checkbox"/> | Poor Information <input type="checkbox"/>      |  | <input type="checkbox"/> | Crushing               | <input type="checkbox"/> | Countersink                       |
| Tribal Knowledge <input type="checkbox"/>   | <input type="checkbox"/> | Rushing <input type="checkbox"/>               |  | <input type="checkbox"/> | Heat Treat             | <input type="checkbox"/> | Cut Too Short                     |
| LOA <input type="checkbox"/>                | <input type="checkbox"/> | Product Improvement <input type="checkbox"/>   |  | <input type="checkbox"/> | Wave/Twist in Tube     | <input type="checkbox"/> | Instructions Incomplete/Unclear   |
| Substation <input type="checkbox"/>         | <input type="checkbox"/> | Process Improvement <input type="checkbox"/>   |  | <input type="checkbox"/> | Marks/Chatter          | <input type="checkbox"/> | Drill Holes                       |
| Past Expiry Date <input type="checkbox"/>   | <input type="checkbox"/> | Manufacturing Process <input type="checkbox"/> |  | OTHER : _____            |                        |                          |                                   |
| Misidentified <input type="checkbox"/>      | <input type="checkbox"/> | Past Due <input type="checkbox"/>              |  |                          |                        |                          |                                   |

|                              |                      |                     |                    |
|------------------------------|----------------------|---------------------|--------------------|
| <b>DART AEROSPACE LTD</b>    |                      | <b>Work Order:</b>  | <b>138225</b>      |
| <b>Description:</b> Plate    |                      | <b>Part Number:</b> | <b>D4131-7</b>     |
| <b>Inspection Dwg:</b> D4131 | <b>Rev:</b> <i>B</i> |                     | <b>Page 1 of 1</b> |

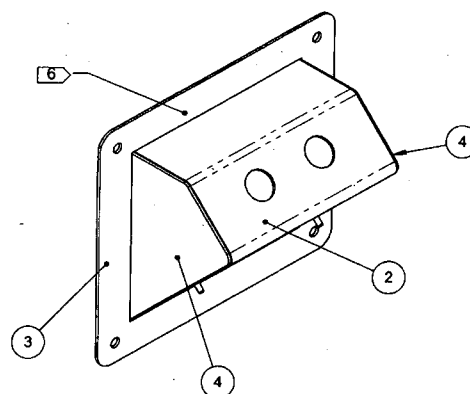
### FIRST ARTICLE INSPECTION CHECKLIST

| Drawing Dimension | Tolerance            | Actual Dimension | Accept   | Reject | Method of Inspection | Comments |
|-------------------|----------------------|------------------|----------|--------|----------------------|----------|
| Ø0.098            | +0.004/-0.001        | Ø.097            | /        |        | V: D-02              |          |
| Ø0.191            | +0.005/-0.001        | Ø.193            | /        |        |                      |          |
| 0.500             | +/-0.010             | .500             | /        |        |                      |          |
| 0.59              | +/-0.030             | .590             | /        |        |                      |          |
| 0.405             | +/-0.010             | .407             | /        |        |                      |          |
| 4.600             | +/-0.010             | 4.599            | /        |        |                      |          |
| 3.64              | +/-0.030             | 3.639            | /        |        |                      |          |
| 4.81              | +/-0.030             | 4.812            | /        |        |                      |          |
| 4.10              | +/-0.030             | 4.103            | /        |        |                      |          |
| 5.41              | +/-0.030             | 5.414            | /        |        |                      |          |
| 0.66              | +/-0.030             | .660             | /        |        |                      |          |
| 4.000             | +/-0.010             | 3.998            | /        |        |                      |          |
| 0.063             | +/-0.010             | .062             | /        |        |                      |          |
| <i>Ø.191</i>      | <i>+0.005/-0.001</i> | <i>Ø.193</i>     | <i>/</i> |        |                      |          |
|                   |                      |                  |          |        |                      |          |
|                   |                      |                  |          |        |                      |          |
|                   |                      |                  |          |        |                      |          |
|                   |                      |                  |          |        |                      |          |
|                   |                      |                  |          |        |                      |          |
|                   |                      |                  |          |        |                      |          |
|                   |                      |                  |          |        |                      |          |
|                   |                      |                  |          |        |                      |          |

|                     |                 |                    |                                        |                              |  |
|---------------------|-----------------|--------------------|----------------------------------------|------------------------------|--|
| <b>Measured by:</b> | <i>DC</i>       | <b>Audited by:</b> | <b>DAS</b><br><b>38</b><br><b>9-89</b> | <b>Preliminary Approval:</b> |  |
| <b>Date:</b>        | <i>16/01/21</i> | <b>Date:</b>       | <i>JAN 22 2016</i>                     | <b>Date:</b>                 |  |

| Rev | Date     | Change                           | Revised by | Approved           |
|-----|----------|----------------------------------|------------|--------------------|
| A   | 10.10.25 | New Issue                        | KJ         |                    |
| B   | 12.07.31 | Dimensions updated per Dwg Rev B | KJ         | <i>[Signature]</i> |

| ITEM | QTY<br>-041 | P/N       | DESCRIPTION       |
|------|-------------|-----------|-------------------|
| 1    | X           | D4131-041 | MANIFOLD ASSEMBLY |
| 2    | 1           | D4131-045 | BASE ASSEMBLY     |
| 3    | 1           | D4131-1   | FRONT PLATE       |
| 4    | 2           | D4131-5   | SIDE PLATE        |



**D4131-041 MANIFOLD ASSEMBLY**

SHOP COPY  
RETURN TO  
ENGINEERING  
UNCONTROLLED COPY  
SUBJECT TO AMENDMENT  
WITHOUT NOTICE  
WORK ORDER

NO. 138225 MCL  
15-10-28

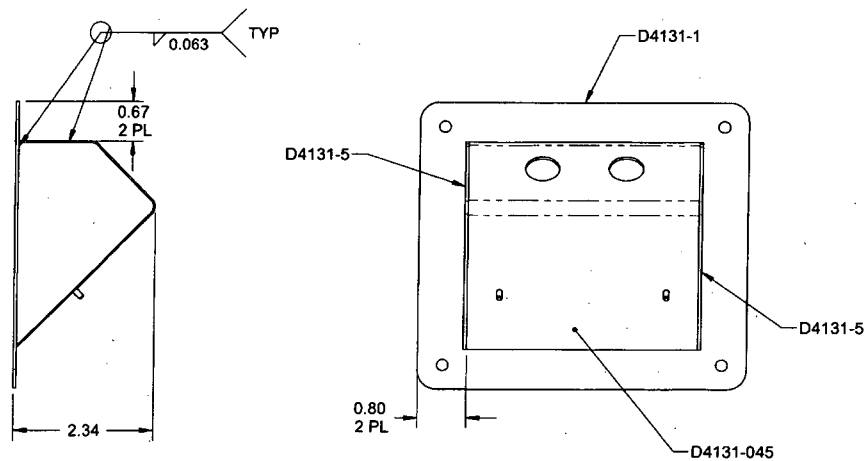
**RELEASED**  
2014-10-20  
*MP*

**NOTES:**

- 1) MATERIAL: N/A
- 2) FINISH: N/A
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: PER QSI 044 6.1
- 7) WEIGHT: 0.66 lbs

|            |                                                                                                      |                                                                                                                                                                                                                                                                                                     |               |
|------------|------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| C          | ADD Ø0.191 HOLE DIMENSION (ZN B1-9); REF PAR14-364                                                   | RF                                                                                                                                                                                                                                                                                                  | 14.09.08      |
| B          | D4131-045 WAS D4131-3 (ZN D3-1); ADD 4131-045 (ZN B4-3); ADD Ø0.098 (ZN B4-7); ADD 4131-9 (ZN B5-10) | RF                                                                                                                                                                                                                                                                                                  | 11.07.27      |
| A          | NEW ISSUE                                                                                            | RF                                                                                                                                                                                                                                                                                                  | 10.09.16      |
| REV.       | DESCRIPTION                                                                                          | BY                                                                                                                                                                                                                                                                                                  | DATE          |
| DESIGN     | RF                                                                                                   | <b>DART AEROSPACE USA, INC.</b><br>KENT, WA                                                                                                                                                                                                                                                         |               |
| DRAWN      | RF                                                                                                   |                                                                                                                                                                                                                                                                                                     |               |
| CHECKED    | VS                                                                                                   | DRAWING NO.                                                                                                                                                                                                                                                                                         | REV. C        |
| MFG. APPR. | JFS                                                                                                  | D4131                                                                                                                                                                                                                                                                                               | SHEET 1 OF 10 |
| APPROVED   | HS                                                                                                   | TITLE                                                                                                                                                                                                                                                                                               | SCALE         |
| DE APPR.   | DS                                                                                                   | <b>MANIFOLD ASSEMBLY</b>                                                                                                                                                                                                                                                                            | NTS           |
| DATE       | 14.09.08                                                                                             | <small>COPYRIGHT © 2010 BY DART AEROSPACE USA, INC.<br/>THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE USA, INC.</small> |               |

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**D4131-041 MANIFOLD ASSEMBLY**  
(AUXILIARY VIEW)

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2014-10-20

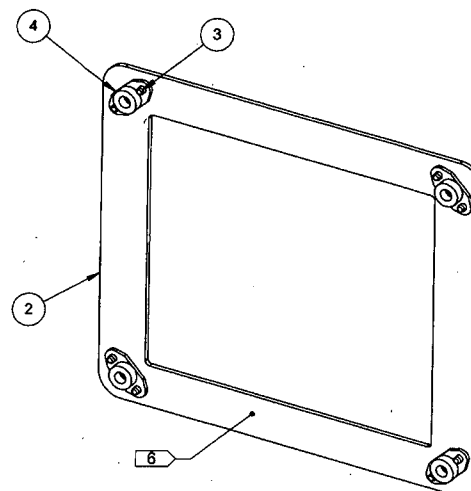
**NOTES:**

- 1) MATERIAL: N/A
- 2) FINISH: N/A
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: PER QSI 044 6.1
- 7) WEIGHT: 0.66 lbs
- 8) WELD PER DART QSI 004

APPROVED

|            |          |                                                                                                                                                                                                                                                                                                   |               |
|------------|----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| DESIGN     | RF       | <b>DART AEROSPACE USA, INC.</b>                                                                                                                                                                                                                                                                   |               |
| DRAWN      | RF       | KENT, WA                                                                                                                                                                                                                                                                                          |               |
| CHECKED    | VS       | DRAWING NO.                                                                                                                                                                                                                                                                                       | REV. C        |
| MFG. APPR. | JFS      | D4131                                                                                                                                                                                                                                                                                             | SHEET 2 OF 10 |
| APPROVED   | HS       | TITLE                                                                                                                                                                                                                                                                                             | SCALE         |
| DE APPR.   | DS       | <b>MANIFOLD ASSEMBLY</b>                                                                                                                                                                                                                                                                          | NTS           |
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| ITEM | QTY<br>-043 | P/N          | DESCRIPTION             |
|------|-------------|--------------|-------------------------|
| 1    | X           | D4131-043    | DOUBLER ASSEMBLY        |
| 2    | 1           | D4131-7      | SIDE PLATE              |
| 3    | 8           | MS20426AD3-3 | RIVET, SOLID, CSK       |
| 4    | 4           | MS21069L3    | NUT PLATE, SELF-LOCKING |



**D4131-043 DOUBLER ASSEMBLY**

**NOTES:**

- 1) MATERIAL: N/A
- 2) FINISH: N/A
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: PER QSI 044 6.1
- 7) WEIGHT: 0.07 lbs

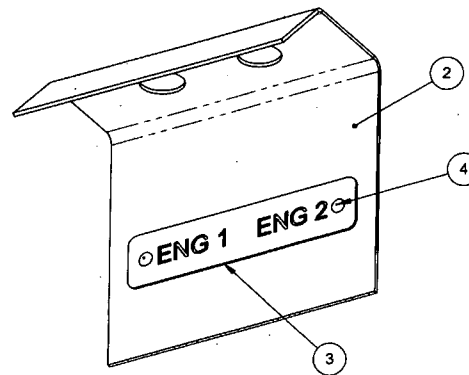
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2014-10-28

|          |            |     |                                             |               |
|----------|------------|-----|---------------------------------------------|---------------|
| APPROVED | DESIGN     | RF  | <b>DART AEROSPACE USA, INC.</b><br>KENT, WA |               |
|          | DRAWN      | RF  |                                             |               |
|          | CHECKED    | VS  | DRAWING NO.                                 | REV. C        |
|          | MFG. APPR. | JFS | <b>D4131</b>                                | SHEET 3 OF 10 |
|          | APPROVED   | HS  | TITLE                                       | SCALE         |
|          | DE APPR.   | DS  | <b>MANIFOLD ASSEMBLY</b>                    | NTS           |

DATE 14.09.08

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| ITEM | QTY<br>-045 | P/N         | DESCRIPTION            |
|------|-------------|-------------|------------------------|
| 1    | X           | D4131-045   | BASE ASSEMBLY          |
| 2    | 1           | D4131-3     | BASE                   |
| 3    | 1           | D4131-9     | LABEL PLATE            |
| 4    | 2           | MS20615-3M3 | RIVET, SOLID, PAN-HEAD |



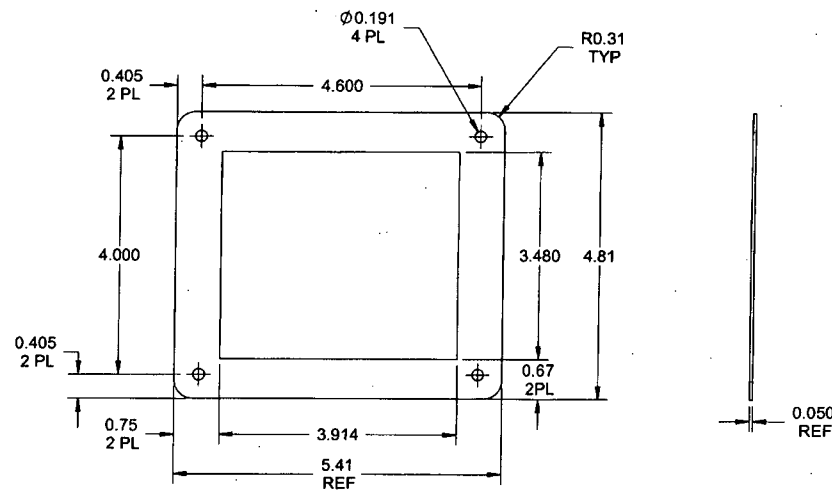
**D4131-045 BASE ASSEMBLY**

**NOTES:**

- 1) MATERIAL: N/A
- 2) FINISH: N/A
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: N/A
- 7) WEIGHT: 0.35 lbs

**RELEASED**  
2014-10-20  
*[Signature]*

|          |            |          |                                                                                                                                                                                                                                                                                           |               |
|----------|------------|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| APPROVED | DESIGN     | RF       | <b>DART AEROSPACE USA, INC.</b><br>KENT, WA                                                                                                                                                                                                                                               |               |
|          | DRAWN      | RF       |                                                                                                                                                                                                                                                                                           |               |
|          | CHECKED    | VS       | DRAWING NO.                                                                                                                                                                                                                                                                               | REV. C        |
|          | MFG. APPR. | JFS      | D4131                                                                                                                                                                                                                                                                                     | SHEET 4 OF 10 |
|          | APPROVED   | HS       | TITLE                                                                                                                                                                                                                                                                                     | SCALE         |
|          | DE APPR.   | DS-#     | <b>MANIFOLD ASSEMBLY</b>                                                                                                                                                                                                                                                                  | NTS           |
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**D4131-1 FRONT PLATE**

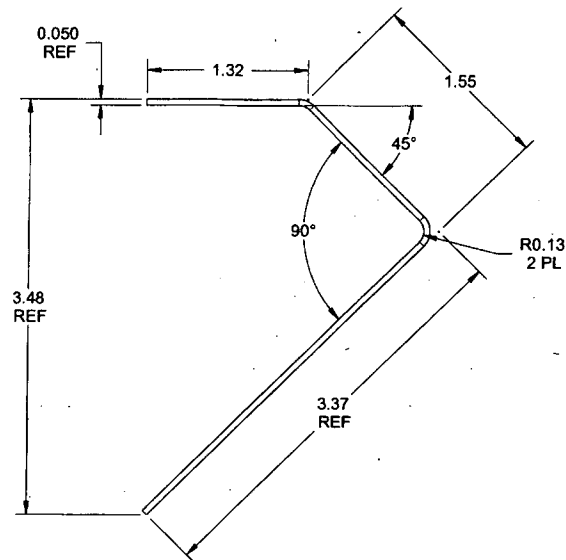
**NOTES:**

- 1) MATERIAL: AISI 304/316 STAINLESS STEEL ANNEALED 2B FINISH 0.050 (18 GAUGE) SHEET  
PER MIL-S-5059  
OR AMS 5513 (304)  
OR AMS 5524 (316)  
OR ASTM A240  
OR ASME SA240  
PER DART SPEC. M304S18GA
- 2) FINISH: N/A
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: NONE
- 7) WEIGHT: 0.18 lbs

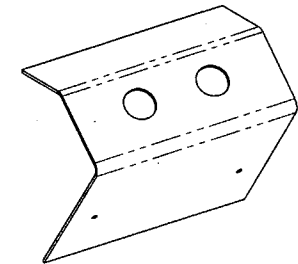
**RELEASED**  
2014-10-20

|                      |            |                                                                                                                                                                                                                                                                                                     |                                             |        |
|----------------------|------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------|--------|
| APPROVED             | DESIGN     | RF                                                                                                                                                                                                                                                                                                  | <b>DART AEROSPACE USA, INC.</b><br>KENT, WA |        |
|                      | DRAWN      | RF                                                                                                                                                                                                                                                                                                  |                                             |        |
|                      | CHECKED    | VS                                                                                                                                                                                                                                                                                                  | DRAWING NO. <b>D4131</b>                    | REV. C |
|                      | MFG. APPR. | JFS                                                                                                                                                                                                                                                                                                 | SHEET 5 OF 10                               |        |
|                      | APPROVED   | HS                                                                                                                                                                                                                                                                                                  | TITLE                                       | SCALE  |
|                      | DE APPR.   | DS                                                                                                                                                                                                                                                                                                  | <b>MANIFOLD ASSEMBLY</b>                    | NTS    |
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**D4131-3 BASE**  
(MAKE FROM D4131-3F FLAT PATTERN)



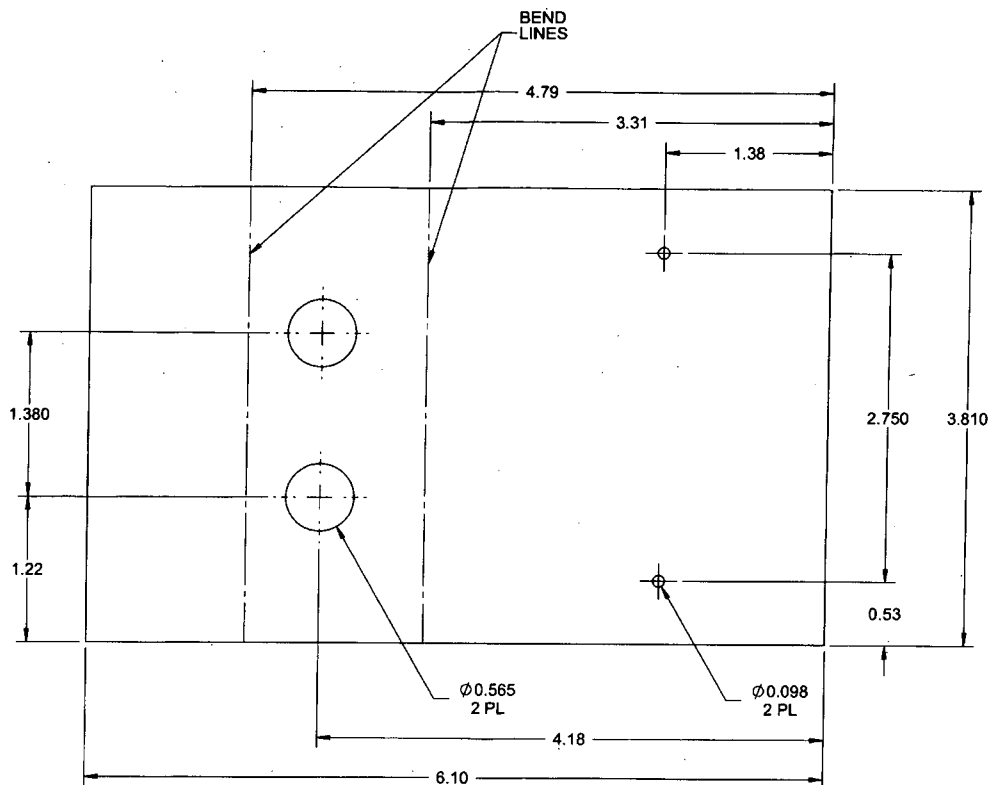
**RELEASED**  
2014 -10- 20  
*mp*

**NOTES:**

- 1) MATERIAL: MAKE FROM D4131-3F FLAT PATTERN
- 2) FINISH: N/A
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED.
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: NONE
- 7) WEIGHT: 0.33 lbs

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|            |          |                                                                                                                                                                                                                                                                                                     |               |
|------------|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| DESIGN     | RF       | <b>DART AEROSPACE USA, INC.</b>                                                                                                                                                                                                                                                                     |               |
| DRAWN      | RF       | KENT, WA                                                                                                                                                                                                                                                                                            |               |
| CHECKED    | VS       | DRAWING NO.                                                                                                                                                                                                                                                                                         | REV. C        |
| MFG. APPR. | JFS      | <b>D4131</b>                                                                                                                                                                                                                                                                                        | SHEET 6 OF 10 |
| APPROVED   | HS       | TITLE                                                                                                                                                                                                                                                                                               | SCALE         |
| DE APPR.   | DS       | <b>MANIFOLD ASSEMBLY</b>                                                                                                                                                                                                                                                                            | NTS           |
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**D4131-3F FLAT PATTERN**

**NOTES:**

1) MATERIAL: AISI 304/316 STAINLESS STEEL ANNEALED 2B FINISH 0.050 (18 GAUGE) SHEET  
 PER MIL-S-5059  
 OR AMS 5513 (304)  
 OR AMS 5524 (316)  
 OR ASTM A240  
 OR ASME SA240  
 PER DART SPEC. M304S18GA

2) FINISH: N/A

3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED

4) UNITS: INCHES UNLESS OTHERWISE NOTED

5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX

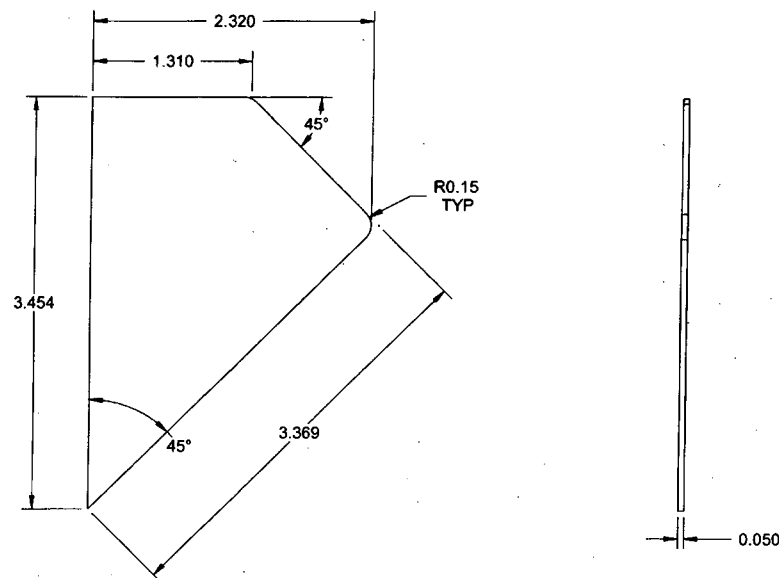
6) IDENTIFICATION: NONE

7) WEIGHT: 0.33 lbs

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 2014-10-20

APPROVED

|            |          |                                                                                                                                                                                                                                                                                           |               |
|------------|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| DESIGN     | RF       | <b>DART AEROSPACE USA, INC.</b>                                                                                                                                                                                                                                                           |               |
| DRAWN      | RF       | KENT, WA                                                                                                                                                                                                                                                                                  |               |
| CHECKED    | VS       | DRAWING NO.                                                                                                                                                                                                                                                                               | REV. C        |
| MFG. APPR. | JFS      | <b>D4131</b>                                                                                                                                                                                                                                                                              | SHEET 7 OF 10 |
| APPROVED   | HS       | TITLE                                                                                                                                                                                                                                                                                     | SCALE         |
| DE APPR.   | DS       | <b>MANIFOLD ASSEMBLY</b>                                                                                                                                                                                                                                                                  | NTS           |
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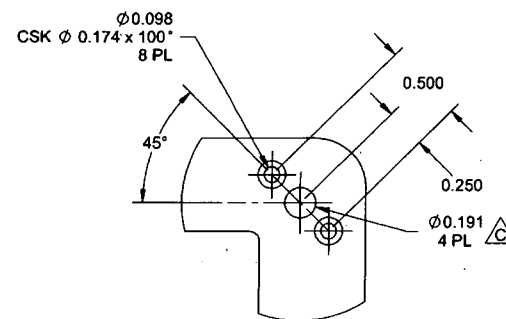
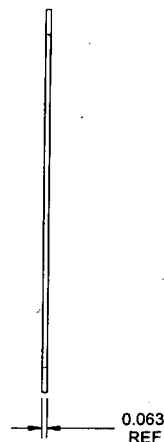
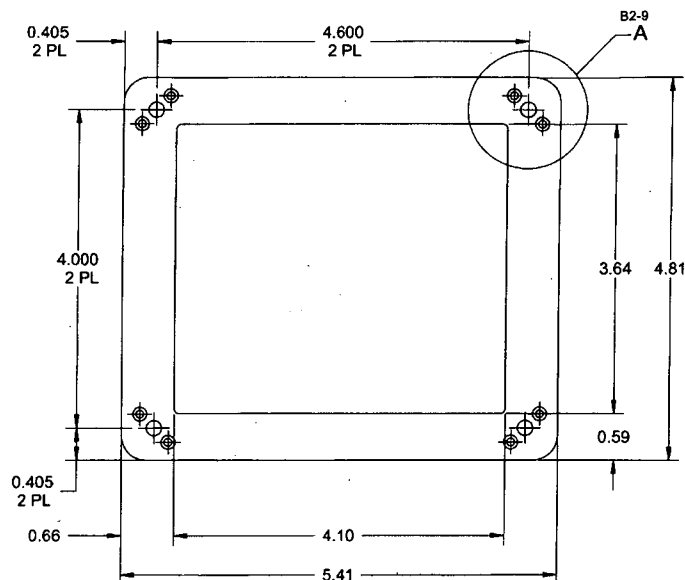
**D4131-5 SIDE PLATE**

**NOTES:**

- 1) MATERIAL: AISI 304/316 STAINLESS STEEL ANNEALED 2B FINISH 0.050 (18 GAUGE) SHEET  
PER MIL-S-5059  
OR AMS 5513 (304)  
OR AMS 5524 (316)  
OR ASTM A240  
OR ASME SA240  
PER DART SPEC. M304S18GA
- 2) FINISH: N/A
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: NONE
- 7) WEIGHT: 0.07 lbs

**RELEASED**  
2014-10-20

|          |            |          |                                                                                                                                                                                                                                                                                        |        |
|----------|------------|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|
| APPROVED | DESIGN     | RF       | <b>DART AEROSPACE USA, INC.</b><br>KENT, WA                                                                                                                                                                                                                                            |        |
|          | DRAWN      | RF       |                                                                                                                                                                                                                                                                                        |        |
|          | CHECKED    | VS       | DRAWING NO.<br><b>D4131</b>                                                                                                                                                                                                                                                            | REV. C |
|          | MFG. APPR. | JFS      | SHEET 8 OF 10                                                                                                                                                                                                                                                                          |        |
|          | APPROVED   | HS       | TITLE                                                                                                                                                                                                                                                                                  | SCALE  |
|          | DE APPR.   | DS       | <b>MANIFOLD ASSEMBLY</b>                                                                                                                                                                                                                                                               | NTS    |
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DETAIL A D5-9  
TYPICAL

**D4131-7 PLATE**

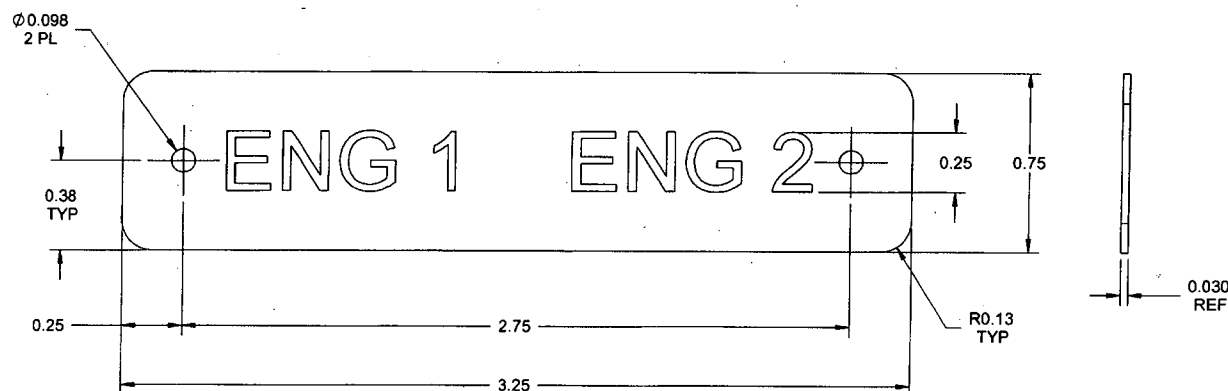
**NOTES:**

- 1) MATERIAL: 6061-T6/T62 ALUMINUM SHEET 0.063 THICK  
PER QQ-A-250/11 OR AMS-QQ-A-250/11  
OR AMS 4025 OR AMS4027  
OR ASTM B209  
PER DART SPEC. M6061T6S0.063
- 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: NONE
- 7) WEIGHT: 0.07 lbs

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2014-10-20

|          |            |     |                                                                                                                                                                                                                                                                                     |               |
|----------|------------|-----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| APPROVED | DESIGN     | RF  | <b>DART AEROSPACE USA, INC.</b><br>KENT, WA                                                                                                                                                                                                                                         |               |
|          | DRAWN      | RF  |                                                                                                                                                                                                                                                                                     |               |
|          | CHECKED    | VS  | DRAWING NO.                                                                                                                                                                                                                                                                         | REV. C        |
|          | MFG. APPR. | JFS | <b>D4131</b>                                                                                                                                                                                                                                                                        | SHEET 9 OF 10 |
|          | APPROVED   | HS  | TITLE                                                                                                                                                                                                                                                                               | SCALE         |
|          | DE APPR.   | DS  | <b>MANIFOLD ASSEMBLY</b>                                                                                                                                                                                                                                                            | NTS           |
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ENG 1 ENG 2



**D4131-8 LABEL PLATE**

**NOTES:**

1) MATERIAL: AISI 304/316 STAINLESS STEEL ANNEALED 2B FINISH 0.030 (22 GAUGE) SHEET  
 PER MIL-S-5059  
 OR AMS 5513 (304)  
 OR AMS 5524 (316)  
 OR ASTM A240  
 OR ASME SA240  
 PER DART SPEC. M304S22GA

2) FINISH: N/A

3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED

4) UNITS: INCHES UNLESS OTHERWISE NOTED

5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX

6) IDENTIFICATION: NONE

7) WEIGHT: 0.02 lbs

**RELEASED**  
 2014-10-20

|          |            |          |                                                                                                                                                                                                                                                                                                                                        |                |
|----------|------------|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|
| APPROVED | DESIGN     | RF       | <b>DART AEROSPACE USA, INC.</b>                                                                                                                                                                                                                                                                                                        |                |
|          | DRAWN      | RF       | KENT, WA                                                                                                                                                                                                                                                                                                                               |                |
|          | CHECKED    | VS       | DRAWING NO.                                                                                                                                                                                                                                                                                                                            | REV. C         |
|          | MFG. APPR. | JFS      | <b>D4131</b>                                                                                                                                                                                                                                                                                                                           | SHEET 10 OF 10 |
|          | APPROVED   | HS       | TITLE                                                                                                                                                                                                                                                                                                                                  | SCALE          |
|          | DE APPR.   | DS       | <b>MANIFOLD ASSEMBLY</b>                                                                                                                                                                                                                                                                                                               | NTS            |
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